



EUROPEAN UNION

European Regional Development Fund



Co-financed by Greece and the European

SANITURA (TARGET IDENTIFICATION AND DEVELOPMENT OF NOVEL APPROACHES FOR HEALTH AND ENVIRONMENTAL APPLICATIONS)

SANITURA (MIS 5002514) is implemented under the Action for the Strategic Development on the Research and Technological Sectors, funded by the Operational Programme "Competitiveness, Entrepreneurship and Innovation" (NSRF 2014-2020) and co-financed by Greece and the European Union (European Regional Development Fund). Aim of the project is the support of IBA research activities falling into the National Research and Innovation Strategies (RIS), such as the delineation of disease mechanisms, the identification of biomarkers and novel treatment targets, the development of preclinical disease models, the discovery of bioactive molecules and natural products for pharmaceutical and cosmetic applications, and the design of technologies for suppressing the environmental footprint of the agro-food sector. SANITURA supports also the education of a considerable number of young scientists, reducing the brain-drain. The results of the research activities of SANITURA are being presented both to the scientific community and to the public.

Publications:

The following publications from IBA have been supported by SANITURA:

1. Valanti E.K., Chroni A. and Sanoudou D. The future of apolipoprotein E mimetic peptides in the prevention of cardiovascular disease. *Curr. Opin. Lipidol.* 30, 326-341 (2019).

2. Dafnis I., Raftopoulou C., Mountaki C., Megalou E. Zannis V. I. and Chroni A. ApoE isoforms and carboxyl-terminal truncated apoE4 forms affect neuronal BACE1 levels and A β production independently of their cholesterol efflux capacity. *Biochem J.* 475, 1839-1859 (2018).
3. Dafnis I., Argyri L., and Chroni A. Amyloid-peptide β 42 enhances the oligomerization and neurotoxicity of apoE4: the C-terminal residues Leu279, Lys282 and Gln284 modulate the structural and functional properties of apoE4. *Neuroscience* 394, 144-155 (2018). (Εικόνα του άρθρου επιλέχθηκε για το εξώφυλλο του τεύχους)
4. Delimitsou A., F. Fostira, D. Kalfakakou, P. Apostolou, I. Konstantopoulou, C. Kroupis, A.G. Papavassiliou, Z. Kleibl, E. Stratikos, G.E. Voutsinas +, D. Yannoukakos+ (2019) Functional characterization of CHEK2 variants in a *Saccharomyces cerevisiae* system, *Human Mutation* 40(5):631-648,
+
equal authorship. (IF: 5.359)
5. Lesgidou, N., Eliopoulos, E., Goulielmos, G.N. and Vlassi, M. (2018) Insights on the alteration of functionality of a tyrosine kinase 2 variant: A molecular dynamics study. *Bioinformatics*, 34 (17), i781–i786 (<https://doi.org/10.1093/bioinformatics/bty556>)
6. Vlassi, M., Kyritsis, K. A., Vizirianakis, I. S., Giannakouros, T., Aivaliotis, M., Nikolakaki, E. (2019). Data on the expression of SRPK1a in mammals. *Data in Brief*, 25 92019) 104210: 1-6 (<https://doi.org/10.1016/j.dib.2019.104210>)
7. K.Apostolou-Karampelis, D.Polychronopoulos & Y.Almirantis. Introduction of 'Generalized Genomic Signatures' for the quantification of neighbor preferences leads to taxonomy- and functionality-based distinction among sequences. *Scientific Reports* (2019). DOI:10.1038/s41598-018-38157-3
8. Feng, M., Fei, S., Xia, J., Labropoulou, V., Swevers, L., and Sun, J. (2020). Antimicrobial peptides as potential antiviral factors in insect antiviral immune response. *Front. Immunol.* 11, 2020.
9. Biratsi et al., A highly conserved mechanism for the detoxification and assimilation of the toxic phytoproduct L-azetidine-2-carboxylic acid in *Aspergillus nidulans*. *Scientific Reports* 2021, <https://doi.org/10.1038/s41598-021-86622-3>
10. Vayenos D., Romanos Em. G., Papageorgiou G. C., Stamatakis K. (2020) The freshwater cyanobacterium *Synechococcus* sp. PCC7942 under salt stress: A cell factory for sucrose and hydrogen production. *Photosynth.* 146(1-3): 235–245
11. Sagnou, M., Mavroidi, B., Shegani, A., Paravatou-Petsotas, M., Raptopoulou, C.,

- Pscharis, V., Pirmettis, I., Papadopoulos, M., Maria Pelecanou. (2019). Remarkable brain penetration of cyclopentadienyl M(CO)3+ (M = 99mTc, Re) derivatives of benzothiazole and benzimidazole paves the way for their application as diagnostic, with Single Photon Emission Computed Tomography (SPECT), and therapeutic agents for Alzheimer's disease. *J. Med. Chem.* 62, 2638-2650
12. Kazantzis K.T., Koutsonikoli K., Mavroidi B., Zachariadis M., Alexiou P., Pelecanou M., Politopoulos K., Alexandratou E., Sagnou M. (2020). Curcumin derivatives as photosensitizers in Photodynamic Therapy: photophysical properties and in vitro studies with prostate cancer cells. *Photochem. Photobiol. Sci.* 19, 193–206
13. Matiadis, D., Mavroidi, B., Panagiotopoulou, A., Methenitis, C., Pelecanou, M., Sagnou, M. (2020). (E)-(1-(4-Ethoxycarbonylphenyl)-5-(3,4-dimethoxyphenyl)-3-(3,4-dimethoxystyryl)-2-pyrazoline: Synthesis, Characterization, DNA-Interaction, and Evaluation of Activity Against Drug-Resistant Cell Lines. *Molbank*, M1114
14. Sagnou, M., Mavroidi, B., Kaminari, A., Boukos, N., Pelecanou, M. (2020). Novel isatin thiosemicarbazone derivatives as potent inhibitors of β -amyloid peptide (A β) aggregation and toxicity. *ACS Chem. Neurosci.* 11, 2266-2276
15. Mourtas, S., Mavroidi, B., Marazioti, A., Kannavou, M., Sagnou, M., Pelecanou, M., Antimisiaris, S.G. (2020). Liposomes Decorated with 2-(4'-Aminophenyl)benzothiazole Effectively Inhibit A β 1–42 Fibril Formation and Exhibit in Vitro Brain- Targeting Potential. *Biomacromolecules*, 21, 4685-4698
16. Kaminari A, Tsilibary EC, Tzinia A. [A New Perspective in Utilizing MMP-9 as a Therapeutic Target for Alzheimer's Disease and Type 2 Diabetes Mellitus.](#)
J Alzheimers Dis
. 2018;64(1):1-16. doi: 10.3233/JAD-180035.
17. Liu, J., Swevers, L., Kolliopoulou, A., and Smagghe, G. (2019). Arboviruses and the Challenge to Establish Systemic and Persistent Infections in Competent Mosquito Vectors: The Interaction With the RNAi Mechanism. *Front. Physiol.* 10, 890.
18. Kolliopoulou, A., Santos, D., Taning, C.N.T., Wynant, N., Vanden Broeck, J., Smagghe, G., and Swevers, L. (2019). PIWI pathway against viruses in insects. *Wiley Interdiscip Rev RNA*. 2019, e1555.
19. Swevers, L., Liu, J., and Smagghe, G. (2018). Defense mechanisms against viral infection in *Drosophila*: RNAi and non-RNAi. *Viruses* **10**, 230.
20. Zhao, Y., Sun, J., Labropoulou, V., and Swevers, L. (2018). Beyond baculoviruses: additional biotechnological platforms based on insect RNA viruses. *Adv. Insect Physiol.* **55**, 123-162.
21. Wang, L., Cappelle, K., Santos, D., Vanden Broeck, J., Smagghe, G., and Swevers, L. (2019). Short-term persistence precedes pathogenic infection: Infection kinetics of cricket paralysis virus in silkworm-derived Bm5 cells. *J. Insect Physiol.* **115**, 1-11.
22. Zhao, Y., Kolliopoulou, A., Ren, F., Lu, Q., Labropoulou, V., Swevers, L., and Sun, J. (2019). Transcriptional response of immune-related genes after endogenous expression of VP1 and exogenous exposure to VP1-based VLPs and CPV virions in lepidopteran cell lines. *Mol. Genet. Genomics* 294, 887-899.

23. Swevers, L., Feng, M., Ren, F., and Sun, J. (2020). Antiviral defense against Cypovirus 1 (*Reoviridae*) infection in the silkworm, *Bombyx mori*. *Arch. Insect Biochem. Physiol.* 103, e21616.
24. Kolliopoulou, A., Kontogiannatos, D., and Swevers, L. (2020). The Use of Engineered Plant Viruses in a Trans-Kingdom Silencing Strategy Against Their Insect Vectors. *Front. Plant Sci.* 11, 917.
25. Chrysargyris et al. (2021) Organic Cultivation and Deficit Irrigation Practices to Improve Chemical and Biological Activity of *Mentha spicata* Plants. *Agronomy* 11, 599. doi: 10.3390/agronomy11030599
26. Galeou A. and Prombona A. (2020) Daily rhythmic leaf movements and expression of circadian clock genes are differentially synchronized by light in *Phaseolus vulgaris* (Plant Gene 23,100245).
27. Ch. Gournas A. Athanasopoulos and V. Sophianopoulou 2018. On the Evolution of Specificity in Members of the Yeast Amino Acid Transporter Family as Parts of Specific Metabolic Pathways *Int. J. Mol. Sci.* 19(5), 1398. <https://doi.org/10.3390/ijms19051398>
28. Mavrogonatou E., Kouroumalis A., Papadopoulou A., Pratsinis H., Kletsas D. (2021) Cell-based therapies for the regeneration of the intervertebral disc: promises and challenges. *Acta Orthopaedica Et Traumatologica Hellenica*, 72 (1): 21-29
29. Mavrogonatou et al. (2019) The role of senescence in cancer development. *Semin. Cancer Biol.* (in press) DOI: 10.1016/j.semcan.2019.06.018
30. Mavrogonatou et al. (2021) Down-Regulation of the Proteoglycan Decorin Fills in the Tumor-Promoting Phenotype of Ionizing Radiation-Induced Senescent Human Breast Stromal Fibroblasts. *Cancers* 13: 1987. doi: 10.3390/cancers13081987
31. Papadopoulou et al. (2019) Effect of hyperglycaemic conditions on the response of human periodontal ligament fibroblasts to mechanical stretching. *Eur.J.Orthod.* 2019, 41: 583-590, doi: 10.1093/ejo/cjz051
32. Papadopoulou et al. (2020) Reacquisition of a spindle cell shape does not lead to the restoration of a youthful state in senescent human skin fibroblasts. *Biogerontology* 2020, 21: 695-708, doi: 10.1007/s10522-020-09886-8.
33. Papadopoulou et al. (2020) Short- and long-term treatment with TNF- α inhibits the induction of osteoblastic differentiation in cyclic tensile-stretched periodontal ligament fibroblasts. *Eur.J.Orthod.* 2020 42: 396-406, doi: 10.1093/ejo/cjaa042
34. Taning et al. (2018) Engineered Flock House Virus for Targeted Gene Suppression Through RNAi in Fruit Flies (*Drosophila melanogaster*) in Vitro and in Vivo. *Front. Physiol.* 9:805